ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Usage of the Public Switched	)	CC Docket No. 96-263
Network by Information Service	)	
and Internet Access Provider	)	

COMMENTS OF AMERICA ONLINE, INC.

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America Online, Inc. ("AOL"), by its attorneys, and pursuant to Section 1.430 of the Commission's rules, hereby submits these comments in the Notice of Inquiry ("NOI") released on December 24, 1996, regarding Usage of the Public Switched Network by Information Service and Internet Access Providers.[1/]

INTRODUCTION AND SUMMARY

Since its founding in 1985, AOL has played a leading role in the development of the Internet online services medium to deliver information, entertainment and communications for consumers around the globe.[2/] Presently, AOL's Internet online service has approximately 8 million members with local dial-up access in roughly 700 cities to provide original programming and informative content, E-mail capabilities, access to the World Wide

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[1/] Usage of the Public Switched Network by Information Service and Internet Access Providers, Notice of Inquiry, CC Docket No. 96-262, FCC No. 96-488, __ FCC Rcd ___, (rel. Dec. 24, 1996).

[2/] Headquartered in Dulles, Virginia, AOL currently operates in the United States, Canada, the United Kingdom, France, Germany and Japan.

Web and informational databases, electronic magazines and newspapers, and opportunities to participate in online "chat" conferences. The vast majority of AOL's members are residential, using the service for recreation and personal information and entertainment.

As the world's largest provider of Internet online services, AOL has a strong interest in ensuring that its members receive service in an efficient, reliable and economical manner, without regard to the underlying network technology used. Accordingly, AOL applauds the FCC's decision to commence this NOI to identify policies that will facilitate the development of the high-bandwidth facilities that are increasingly necessary to serve the data-based and information-rich future. To date, while some have made dire predictions about the collapse of the existing public telephone network and enormous uncompensated telephone company costs, there is no genuine evidence to support either forecast.[3/] Given the clear and well-publicized trends in data traffic, however, this NOI can assist in ensuring that all consumers,

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[3/] See, e.g., Comments of AOL in CC Docket 96-262, Notice of Proposed Rulemaking, January 29, 1997 ("AOL NPRM Comments") at 13. In that phase of the FCC's proceeding, numerous parties, including AOL, underscored that these claims were not grounded in fact, but were instead generally based upon isolated anecdotes. In particular, the Internet Access Coalition thoroughly refuted such contentions by demonstrating that Internet online usage does not cause uncompensated costs and that imposition of interexchange carrier access charges are unwise and unnecessary for Internet Service Providers ("ISPs"). See Lee L. Selwyn and Joseph W. Laszlo, "The Effect of Internet Use on the Nation's Telephone Network," Economics and Technology, Inc., Jan. 22, 1997 ("ETI Study") (submitted as attachment to Comments of the Internet Access Coalition, CC Docket 96-262, filed January 29, 1997 ("IAC NPRM Comments"); Reply Comments of the Internet Access Coalition, CC Docket 96-262, February 14, 1997 ("IAC Reply Comments"). Those comments, as well as the AOL NPRM Comments and Reply Comments, are incorporated herein by reference.

regardless of the technology they use or location they live in, will be able to enjoy the public interest benefits of the emerging Internet online offerings.

By way of background, AOL Corporation is currently divided into three divisions: AOL Networks, AOL Studios, and ANS Access. AOL Networks, which includes the flagship AOL Internet online service and AOL International Services, creates the "AOL experience" with its variety of interactive features such as news, sports, weather, financial information and transactions, and electronic shopping. AOL Studios, the company's programming arm, develops interactive programming for broad distribution. For example, AOL Studios runs innovative programming properties such as AOL innovative chat (iChatco), games (INN), local information (AOL Digital Cities), and independent (AOL Studios Greenhouse) programming. These programming services are for distribution both on AOL's Internet online service and through other media channels.

Finally, ANS Access, which operates one of the world's largest and most reliable data communications networks, provides network services to a variety of businesses and to the AOLnet network, on which the majority of AOL traffic travels. Significantly, it was the ANS technical team that actually designed and developed the hardware and software for the Internet backbone and managed that backbone in the U.S. for nine years. ANS Access also designs, installs, manages, and maintains nationwide corporate data networks over ANSnet, one of the fastest and largest TCP/IP networks in the world.

Through its services, AOL provides consumers with the sense of the unique AOL community. In offering its Internet online services to the public, AOL recognizes the need to deliver to consumers a reliable and efficient product that combines innovation and high-quality at an affordable price, especially as the industry is growing at unprecedented rates. Today, AOL members are spending more than 4 million total hours online in the average day, with an average of 10.5 million E-mails and 225 million web hits each day.

To reach its largely residential members, AOL presently must rely upon the public switched telephone network, as it is the only available ubiquitous communications facility that reaches the overwhelming majority of homes that AOL serves. As AOL has stated elsewhere, the architecture of the public switched telephone network is not optimized for data traffic, and can serve to thwart the efficient delivery of AOL's service to its members.[4/] Despite the present inefficiencies of the circuit switched network, there are now some indications that the incumbent local telephone carriers ("ILECS") are beginning to recognize the need for network architectures and technologies that are capable of handling data traffic more efficiently than the present circuit-switched network. AOL is encouraged by these

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[4/] In its comments in the Access Charge Reform Notice of Proposed Rulemaking, AOL demonstrated that the circuit-switched network is ill-suited for data traffic, explained that the incumbent telephone companies are presently being compensated for their network costs through their service and second line revenue, and detailed the obstacles AOL and other ISPs, and their vendors, face as they seek to interconnect and gain access to consumers. In particular, AOL stressed the lack of competitive choice for customers and the need for economical, ubiquitous alternatives for data traffic. See AOL NPRM Comments at 10-12; AOL Reply Comments at 14.

developments and hopes that they can assist in offering consumers improved data traffic flows.

In the next three to five years, however, as these modifications and enhancements to the circuit switched network are being deployed, the FCC must also implement regulatory policies that promote interconnectivity and open access to maximize choice and opportunity. Just as the capacity and capability of the Internet has flourished by being grounded in open access and interoperability principles, so too can the efficiency of data traffic be improved through analogous directives for telecommunications carriers. The FCC should not, however, saddle the development of competitive and efficient data networks with the baggage of investment and cost recovery issues relating to the circuit-switched network, as it would send precisely the wrong economic signals to the emerging competitive market.

To ensure the availability of data-friendly networks in the long term, the FCC should focus on the overarching need for increased facilities-based competition, especially in the "last mile" to the home, so that the public no longer need rely solely on telephone company facilities, whether directly or indirectly through interconnecting competitors. Accordingly, the FCC should continue implementing and enforcing vigorously the pro-competitive policies of the Telecommunications Act of 1996[5/] ("1996 Act"), which are now just starting to bear fruit with the potential of cable modems, the advent of wireless technologies, and the emergence of utility company facilities to provide the critical alternate access paths for data

[5/] Pub. L. No. 104-104, 110 Stat. 56 (Feb. 8, 1996).

services. While AOL is technology neutral -- as long as the technology will enable it to serve ubiquitously its members at a reasonable price -- each of these developments potentially offers tremendous opportunity to enhance and improve the increasing flow of data traffic.

Finally, during the transition to a truly competitive market, the FCC should ensure that the ILECs do not use their residual market power to stifle choice, innovation and new services in the value-added data services business. As of today, every major ILEC has already announced or embarked upon ambitious plans to enter the Internet online services business. Because these companies continue to control the local telephone network facilities, there is genuine risk of anticompetitive conduct that will impede the preservation and growth of vibrant, sustainable competition. Whether through unfair and improper marketing practices, through discriminatory interconnection arrangements or through impermissible cross-subsidization, the ILECs have the potential to distort the competitive landscape. Accordingly, the FCC should act to promote fair competition by barring all such anticompetitive practices.

I. THE FCC CAN BEST STIMULATE DEPLOYMENT OF HIGH-BANDWIDTH TECHNOLOGIES BY ALLOWING COMPETITION TO DICTATE THE PACE AND LEVEL OF INVESTMENT IN DATA-FRIENDLY NETWORK ARCHITECTURE AND TECHNOLOGIES

A. The Commission's Policies Should Reward Risk And Encourage Network Connectivity Rather than Guarantee Cost Recovery

Market forces and network connectivity have nourished the Internet online services and data transmission businesses. The extraordinary growth of these services has occurred

outside the regulatory framework and cost recovery rubric that has governed the evolution of local exchange telephone networks and has emerged because companies were willing to make investments in broadband technology and new network services despite the absence of both a guaranteed return and broad captive subscriber base over which to recover their costs. Moreover, the development of the Internet was grounded in open exchange of traffic and interconnection to create the network of networks that exists today. Thus, the explosive growth of the Internet online services business demonstrates that to "best facilitate the development of the high-bandwidth data networks of the future,"[6/] the Commission's policies should be rooted in encouraging competitive risk-taking, rather than in guaranteeing cost recovery, and should promote open access and network connectivity.[7/]

Accordingly, the Commission should reject policies which directly leash the accelerated deployment of end-to-end broadband data networks to the resolution of regulatory issues enveloping the circuit-switched network such as the treatment of embedded costs and

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[6/] Notice at ¶ 311.

[7/] See Speech of Reed E. Hundt, Chairman, Federal Communications, ACM Conference, March 4, 1997 ("ACM Speech"), at 5:

> Our job should be to create efficient incentives for companies to deploy these [broadband] technologies. That doesn't mean subsidizing industries we like. It means allowing the market to work without distortion. Companies that can provide higher bandwidth more cheaply won't need subsidies to be successful as long as government or monopolies don't try to distort the market.

the revision of the Transport Interconnection Charge.[8/] Broadband network policies should not be tethered to the need to address issues such as ILEC recovery of embedded costs and other matters arising from the transition to a competitive environment for local telephony.[9/] Indeed, such an approach could actually hinder broadband network deployment by deterring new entry while providing the ILECs with incentives to expand their circuit-switched capacity. Given the inherent inefficiencies of today's circuit-switched network for the increasing data traffic of the future, it would be illogical to create artificial incentives for the ILECs to expand that network.

The ILECs' historical aversion to risk and their focus on assurance of cost recovery as a precondition to accelerated deployment of broadband infrastructure closer to homes[10/]

[8/] See NPRM in CC Docket No. 96-262 at ¶¶ 96-117, 248-270. While AOL recognizes the importance of these issues, and thus acknowledges the legitimate need for the Commission to address them, the Commission should not do so in the context of considering how to create incentives for broadband deployment.

[9/] For example, Bell Atlantic and NYNEX suggest that if the FCC does not adopt the pricing regime they advocate, they will not have sufficient incentive to invest in efficient networks. See Comments of Bell Atlantic and NYNEX in CC Docket No. 96-262, filed Jan. 29, 1997, at 4-8. The Commission should not heed these threats.

[10/] See, e.g., In Re: FCC Bandwidth Forum, January 23, 1997, ("Bandwidth Forum") Transcript at 27-28, Testimony of Pat White, Vice President Research and Development, Bell Atlantic, who states:

> However, there is an element of risk [associated with broadband deployment] I should point out. Because investments in the network like any other investment, maybe unlike most investments, tend to have a pretty long lead time. You know, there's a lot of money, a lot of construction to be spent. And generally you find that consumers are more interested in a new capability when a lot of people have the same

(continued...)

are antithetical to the risk-taking dynamic that has engendered the growth of the Internet online services market and to the manner in which all ISPs, including AOL, operate.[11/] Indeed, the value-added data and Internet online services businesses have developed so rapidly precisely because companies have been willing to take the risk that investments in new technologies and new network capabilities will create a customer base for new markets and new services.[12/]

[10/](...continued)
service. Communications services generally have that property. They're useless for one person. But millions of people they're more interesting.

So we need to see or at least we need to have regulatory policies that are consistent with the fact that you have to basically lay out a lot of money over a long period of time before you begin to see a return on that investment. And the extent that the regulatory framework in fact we're still trying to struggle with the implementation of the Telecommunications Act to the extent that increases the risk for new investments, then I think that could have an impact on the willingness of operators to basically aggressively deploy SDV or ADSL technology.

[11/] For example, AOL has committed to expending $350 million additional to increase its system capacity on the expectation that these investments will be profitable.

[12/] See Bandwidth Forum, supra, at 28, Testimony of Les Vadasz, Senior Vice President, Intel:

I think if you look at our telecommunication carriers today, they spend more significantly, order of magnitude more effort in trying to get into each other's business rather than trying to develop new business based for PC users. And this issue of who pays, well, in real businesses, in competitive markets, you have a right to compete and you have to earn a return. You have to put capital at risk. And what we would like to see is the communication carriers recognize the PC user as a real viable economic opportunity.

While some ILECs continue to signal their reluctance to embrace this sensibility,[13/] the ethos of entrepreneurial risk-taking has driven and will continue to drive the growth of broadband services and networks. As Chairman Hundt recently stated:

> Bandwidth ought to be like pizza. You should be able to get whatever you want -- small, medium, or large -- delivered piping hot to your door, with any combination of voice, video, or data toppings.
>
> Nobody wants to have the status quo shaken up so that you can order bandwidth like pizza. You know why? There's a lot of risk involved. But risk doesn't stop companies in competitive markets like computer hardware or software. If you want bandwidth delivered like pizza, you're going to need a lot of bandwidth companies.[14/]

The Commission should also recognize that the development and encouragement of data-friendly capabilities does not mean that there must be a "total network solution" deployed by today's ILECs.[15/] While the ILECs should be free to offer end-to-end data transmission capabilities, as well as any value-added services related to data traffic, they should not be the exclusive providers of such capabilities, nor should they be the gatekeeper

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[13/] Id. at 35, Testimony of Pat White, Vice President, Research and Development, Bell Atlantic:

> So you're looking at us to say, okay. We're going to spend money to basically go out and fully upgrade, you know, put two million customers on the Net by the end of the decade. That sounds like sending a man to the moon somehow. And yet, there's almost nothing that we could do, at least within the immediate future, to make use of that band width. I mean, the PCs are not there. The services are not there.

[14/] ACM Speech at 4.

[15/] See Bandwidth Forum, Testimony of Pat White, Vice President, Research and Development, Bell Atlantic, Tr. at 35 ("you have to take a really total network solution").

of any "overlay" data network that may be deployed. Significantly, "total network solutions" tend to be exclusionary and closed, which is antithetical to the decentralized, interdependence that has fostered the growth of the Internet online services market.

Notably, the growth and development of the Internet provides a useful analogy for the FCC as it seeks to adapt to the emerging competitive environment. As the Internet moved from the government-funded, research-oriented network of networks, to the commercially-driven structure it is today, there was a deliberate decision to ensure open access, connectivity and interoperability. Under the transition framework developed by the National Science Foundation ("NSF"), Regional Network Providers ("RNPs") (who historically provided access for individual research campuses) obtain their connectivity from selected Network Service Providers ("NSPs").[16/] These NSPs must agree to three bedrock obligations: (1) to connect to hubs called Network Access Points ("NAPs"),[17/] where NSPs will exchange traffic; (2) to route and carry all traffic to or from any research or education

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[16/] "NSF-MCI Background Information on the Internet/NSFNet," April 26, 1995, <http://cuisung.unige.ch/eao/www/internet/usfmci.html>. Approximately 20 cooperative agreements for RNPs were awarded. Id. NSPs include Sprintlink, MCI and ANS.

[17/] There are presently four NAPs that have been awarded as follows: the New York NAP to Sprint; San Francisco NAP to Bellcore with Pacific Bell as the operator; the Chicago NSAP to Bellcore with Ameritech as the operator; and the Washington, D.C. NAP to Metropolitan Fiber Systems, Inc. Datanet ("MFS"). All NAP operators are compensated for their reasonable costs of operating the NAPs. Id.

location; and (3) to make available the routes to a routing arbiter, who provides an inventory of all available routes for electronic "traffic" and makes them available to NSPs.[18/] This decentralized framework, with its reliance upon open connectivity and interoperability at major Internet exchange points has succeeded in facilitating the vibrant commercial Internet that exists today. The Commission should emulate this framework as it creates policies to stimulate improved data networks.

Significantly, there need be no trade-off between expediting development of high-bandwidth networks and "preserving efficient incentives for investment and innovation in the underlying voice network."[19/] The local telephony competition mandated by the

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[18/] Id. The Routing Arbiter is jointly run by Merit and a partnership of Information Sciences Institute at the University of Southern California and IBM. The Routing Arbiter has four key tasks: administering the route servers, supporting a network management system, maintaining the Routing Arbiter database, and route engineering.

In addition to the NAPs, there are several other sites that operate as de facto NAPs -- the Metropolitan Area LANs ("MA"), the Federal Internet Exchange ("FIX") Points, and the Commercial Internet Exchange ("CIX") routers. The MA points include the MA-West interconnection point, maintained by MFS Datanet, and the two MA-East points in Washington, D.C. MA LANs also exist in the following cities: Los Angeles, Chicago, and Houston. The FIX points are FIX-East at the University of Maryland and FIX-West at the NASA Ames Research Center in Mountain View, California. The CIX points are in Herndon, Virginia and Santa Clara, California. Under the formal NAP structure, NAP clients can also negotiate their own agreements with other network providers for the exchange of traffic, referred to as "peering arrangements," independent of the NAPs. Alternatively, NAP clients may sign the "Multilateral Peering Agreement," which established mutually acceptable rules for traffic exchange. See, e.g., "Ameritech Advanced Data Services Chicago NAP Home Page," February 14, 1996, <www.ameritech.com:1080/products/data/nap/> (draft peering agreement).

[19/] Notice at ¶ 311.

Telecommunications Act of 1996 and fostered through the Commission's interconnection rules and other policies can most effectively promote both objectives.[20/] Thus, while the competitive landscape may one day be such that specific Commission regulations or practices will be indicated to create proper incentives to accelerate deployment of broadband network architecture, at this point, the most effective means for the Commission is to ensure that market forces are unconstrained by both monopoly power and artificial regulatory distortions.

B. The Commission's Policies Should Not Deter the Delivery of New Investment and New Services in the Broadband Marketplace

In creating the market and regulatory climate most conducive to attaining the goal of encouraging new investment in broadband data-capable network facilities, the Commission should recognize the need to refrain from broadly regulating emerging new Internet online services and products.[21/] The wealth of new broadband services available to consumers

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[20/] For instance, the Commission's price caps regime, also known as "incentive regulation," is premised on the notion that it creates significant incentives for the efficient delivery of voice services. See Policy and Rules Concerning Rates for Dominant Carriers, 5 FCC Rcd 6786 at ¶¶ 30-31 (1990), modified on recon., 6 FCC Rcd. 2637 (1991), aff'd, National Rural Telecomm. Assn. v. FCC, 988 F.2d 174 (D.C. Cir. 1993).

[21/] By contrast, the Commission should continue its regulatory oversight of entrenched ILECs, as the risk that their continued market power will squelch the development of competition outweighs any benefits of reduced regulation at this time. Only when genuine competition emerges should the FCC rely upon market forces to constrain anticompetitive pricing and practices. See AOL Reply Comments at 14-15.

today highlights the wisdom of the Commission's initial decision to forego regulation of enhanced services.[22/]

To that end, the Commission should not disturb the existing distinction between basic and enhanced services.[23/] Nor should the Commission establish new distinctions between types of enhanced services providers.[24/] The creation of new categories of enhanced service providers based upon usage patterns and putative effects on network congestion is both unnecessary and counterproductive. As explained by AOL and others in the Access Charge NPRM, there is today no genuine "problem" of congestion caused by ISP traffic on the public switched network.[25/] Consequently, artificially segregating certain enhanced service providers to solve this non-existent problem is wholly unnecessary. Indeed, such a step would be counterproductive. Disparate treatment of different enhanced service providers based upon arbitrary distinctions would needlessly embroil the Commission in precisely the

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[22/] In the Matter of Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry), Final Decision, 77 FCC 2d 384 (May 2, 1980) ("Computer II").

[23/] See 47 C.F.R. § 64.702(a).

[24/] Notice at ¶ 316.

[25/] AOL NPRM Comments at 13-14; see also ETI Study, supra, at 3. Moreover, as AOL stated, isolated instances of pinpointed congestion are best addressed through steps such as cooperative engineering, traffic balancing, and rational trunk-side connection rate structures.

types of case-by-case categorization decisions it sought avoid when it adopted its Computer II regime.[26/]

Likewise, the Commission should not seek to regulate emerging Internet online services such as Internet telephony and audio and video streaming as it examines and addresses issues of public switched network usage by ISPs and their customers.[27/] Neither of these developing functionalities presently impact the core issues of network usage that are the subject of this NOI.[28/] Notably, the Commission has already recognized that it is premature to predict precisely how these services will develop in the marketplace.[29/] Moreover, the imposition of regulatory constraints could stifle the investment in, and development of, promising new capabilities that could pave the way for the long-anticipated

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[26/] Computer II, 77 F.C.C. 2d 496 at ¶ 283.

[27/] NOI at ¶ 316.

[28/] Significantly, services referenced to as "Internet telephony" would be classified as enhanced, rather than basic telecommunications, services. The nascent packet-based voice communications services provided over the Internet will likely involve protocol processing at both ends of the connection that act upon the format of the transmission and rely upon customer-premises based software for much, if not all, of their functionality. Such services also are likely to involve interaction with stored information. Transmissions with such characteristics have traditionally been characterized as enhanced services. See 47 C.F.R. § 64.702(a).

[29/] In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Third Annual Report, CC Docket No. 96-133, rel. Jan. 2, 1997 ("Video Competition Report") at ¶ 96 (noting with respect to video streaming that it is clearly "premature to assess the impact of the Internet on the video marketplace.") See also id. at ¶¶ 100-07.

multimedia offerings, ultimately entailing simultaneous transmission of voice, video and data between end users.

II. WHILE THERE ARE DEVELOPING SERVICES AND TECHNOLOGIES THAT SEEK TO INCREASE SPEED AND EFFICIENCY OF DATA TRAFFIC, IN THE LONG TERM VIGOROUS FACILITIES-BASED COMPETITION WILL BEST SERVE NEEDS OF THE RESIDENTIAL CONSUMERS

In recent months, there have been numerous announcements of new technologies and developing services designed as alternatives to complete reliance upon the circuit-switched telephone network to deliver data traffic to packet-based networks.[30/] Because AOL is not dependent upon, or in favor of, a particular technology -- except that any technology the company utilizes must be economically-priced and ubiquitous -- it is clear that the migration of data traffic from the existing voice-oriented circuit-switched telephone network is crucial.[31/] Thus, while short-term solutions will likely depend almost exclusively upon the use of existing ILEC facilities, the FCC must affirm its critical role as the guarantor of free and open access and the watchdog of competitive neutrality. In this way, the FCC can help stimulate the growth of alternative facilities-based high bandwidth network alternatives.

[30/] In the Commission's recent Bandwidth Forum, speakers from over 30 entities presented their views regarding network developments, future bandwidth requirements, and technologies and services that can promote higher bandwidth networks. See Bandwidth Forum, supra, Tr. at 1-3.

[31/] As is well known, at least "75% of access lines that constitute residential loops were built upon the assumption that people would talk less than four minutes per call and make only a few calls." Peter Bernstein, "My Hair Hurts," Telephony, March 3, 1997, at 110. Certainly, these assumptions no longer conform with reality.

A. Emerging Technologies and Services that Enhance the Existing Public Telephone Network Can Help Meet Short-Term Needs

In the NPRM, AOL referenced several ways currently to alleviate any isolated traffic congestion episodes that may occur, including better forward-looking network engineering, traffic rebalancing, and economic pricing of trunk-side connections.[32/] Beyond these relatively simple engineering and price restructuring approaches, several technologies and services have emerged that can help alleviate the clear inefficiencies of the existing network architecture for the carriage of data traffic.[33/] Other potential solutions that use existing network facilities remain in the experimental stage.

Perhaps the most widely-touted technologies that have emerged in recent months are the xDSL ("Digital Subscriber Line") functionalities. These technologies enable the transmission of significantly greater bandwidth over existing copper loops and serve to split the voice and data signals so that data can be transmitted separately.[34/] ADSL, which has

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[32/] See AOL NPRM Comments at 4; AOL Reply Comments at 12. These mechanisms, including switch deloading and load balancing, are also discussed more fully in the IAC Comments, supra.

[33/] For a more complete discussion of these technologies, see IAC Comments, supra.

[34/] See generally George T. Hawley, "ADSL Data: The Next Generation," Telephony, Aug. 12, 1996, at 24-29; John Cioffi, "ADSL Answers the Need for Speed," Telephony, Aug. 12, 1996, at 34-36.

received the greatest publicity of late,[35/] requires a pair of modems -- one on the customer's premises and one in the central office -- to deliver higher-speed access services up to approximately 6 Mbps.[36/] Other xDSL technologies include IDSL (128 Kbps integrated DSL), HDSL (high bit rate DSL up to 704 Kbps) and VDSL (very high bit rate DSL up to 52 Mbps downstream).[37/]

Today, every former Bell operating Company ("BOC") as well as GTE and other ILECs, have announced and/or are running trials of xDSL technology, although only US WEST is actually offering DSL services on a commercial basis.[38/] By using xDSL technologies, the ILECs seek to use the existing network and bypass the central office switch to deliver data traffic in an end-to-end service.[39/]

[35/] See e.g., "ADSL Interoperability Rises, Prices Drop," Telephony, March 3, 1997, at 16; "Not Just for the Big Boys, Smaller Telcos See Future Profits in ADSL," Telephony, Feb. 3, 1997, at 46; "DSL: Coming Soon?," Telephony, Feb. 3, 1997, at 28-36; "Vendors to Support DSL," Communications Week, Jan. 27, 1997, at 8.

[36/] "ADSL on the Move," Telephony, Nov. 18, 1996, at 38.

[37/] There are also other DSL variations, signifying other bit rates, e.g., RADSL and SDSL. See "DSL: Coming Soon?," Telephony, Feb. 3, 1997, at 34. See also Comments of the Internet Access Coalition, CC Docket 96-263.

[38/] "Bells Plan Nationwide DSL Service Rollouts," Communications Week, January 27, 1997, at 1, 70; "DSL: Coming Soon?," Telephony, Feb. 3, 1997, at 34 (detailing the ILECs' trials).

[39/] As AOL and others have noted previously, the central office switch is a significant source of any circuit-switched congestion that may occur due to data traffic volumes. See AOL NPRM Comments at 13-14.

Because xDSL technology relies upon existing copper loops, the deployment of the technology holds promise as an efficient access option. AOL understands that xDSL solutions are not without drawbacks, such as technical limits on the characteristics and length of local loops that can utilize xDSL,[40/] the uneven digitization of U.S. access lines,[41/] two disparate standards for xDSL that may not be compatible,[42/] price and cost issues,[43/] and long deployment time frames.[44/] AOL is nevertheless hopeful that as the market and

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[40/] Indeed, some estimate that it will simply not function for at least one third of American homes because ADSL cannot work through "loaded loops," nor will it work with loops that are in excess of 18,000 feet. Indeed, today there are both performance and reliability issues for all households. In addition, there is a statistically significant trade-off as loops exceed 10,000 feet. See Hawley, supra (citing data from AT&T Paradyne, the developer of carrierless amplitude/phase modulation ADSL). Other forecasts are not as optimistic. See Video Competition Report, supra, at ¶ 184, n. 512 (citing The Yankee Group, Bringing Broadband to the Home: New Networks for New Services, 18-21 (Dec. 1995) (referring only to distances of 6000 feet)).

[41/] See "Canadian Sophistication: Neighbors to the North Lead Network and Data Advances," Telephony, Feb. 24, 1997, at 38.

[42/] There are two types of DSL systems -- one based upon carrierless amplitude phase ("CAP") and another based upon discrete multitone ("DMT") -- that perform differently in different situations, perhaps even with variation from central office to central office, thus raising compatibility and deployment issues. See "Internet Service Cos. See DSL as Salvation Vs. Telcos," Multichannel News, December 9, 1996, at 214; "DSL: Coming Soon?," Telephony, Feb. 3, 1997, at 36.

[43/] Indeed, these cost issues could in effect determine that the xDSL services will be primarily for business users. See "DSL: Coming Soon?," Telephony, Feb. 3, 1997, at 32.

[44/] Even with ambitious rollout plans, large-scale deployment to most U.S. homes will not occur for at least several years. Thus, the most optimistic estimates do not foresee even the beginnings of commercial rollout until 1988. See "ADSL Begins Another Chapter in Internet access," Cable World, March 17, 1997 at, 70-73. (stating that about 80% of U.S.

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technology develop, there will be cost and functionality improvements that will increase further the scope of consumers that could benefit from its deployment. To this end, AOL expects this technology to be pursued seriously, despite statements that some may not be wholly committed to the service.[45/]

Another often-cited group of options are switch-based products and services that seek to route traffic off the voice network and onto packet-based data networks. These products include, for example, Northern Telecom, Inc.'s ("Nortel") "Internet Thruway," that identifies data calls by the phone number dialed and then switches them to a data network or a different switch.[46/] Similar switch enhancements are also being offered by Lucent

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[44/](...continued)
telephone subscribers will not be able to get ADSL until 1999); see also "Internet Service Cos. See DSL as Salvation Vs. Telcos," Multichannel News, December 9, 1996, at 212.

[45/] For example, when Ray Smith, CEO of Bell Atlantic, was asked why they are testing ADSL, he responded, "To slow these guys down." "Catching Up to Ray Smith: Bell Atlantic's CEO Talks About Competition and His Not So Secret Weapon," Telephony, June 24, 1996, 98-108, at 106. He continued:

> Question: It's just competitive advantage?
>
> Answer: Yes. We want to get every bit of deployment. The other thing is it doesn't cost us anything. It's fungible.

[46/] See "Nortel Announces Internet Thruway for Public Carriers," Nortel News Release, Aug. 27, 1996; "Switch Upgrades Relieve Heavy Traffic," Telephony, July 1, 1996, at 10; "Ascend Takes Data Off Voice Switches," Communications Week, December 9, 1996, at 1, 93. Nortel has also announced a new telecommunications access protocol, Nortel I-Link(x), that establishes a permanent connection to the Internet, with data traffic bypassing the central office switch. See "Northern Telecom (Nortel) Internet Access Protocol Enables High-Speed Permanent Digital Network Link Plus Simultaneous Switched Voice Over a Standard Phone Line," Nortel News Release, Jan. 16, 1997.

Technologies, DSC Communications, and others.[47/] Further, SBC Communications, Inc. ("SBC") has commenced offering a service for ISPs called Internet/Intranet Transport Service ("IITS"),[48/] as has Pacific Bell, with its FasTrak Local Access Gateway Service.[49/] SBC states that its IITS service will automatically divert data traffic off the existing voice network.[50/] Significantly, both of these ILEC solutions seek to include modem termination, thereby subsuming a function already provided by ISPs today.[51/] In addition, the SBC service is reported to require a negotiable per-port charge, reported by some to be as high as $35 per-port (or connection).[52/]

Other technologies are also emerging that can help improve the efficient flow of data traffic, while continuing to rely on telephone network facilities. For example, many cable

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[47/] See "Rerouting Internet Traffic Jams," Telephony, Nov. 11, 1996, at 12.

[48/] See "SW Bell Bell Pitches Faster Net Connection," Houston Chronicle, Jan. 14, 1997, <www.chron.com/content/chronicle/business/97/01/15/bell.2-0.html>; "SBC Creates System to Route Internet Calls," The Dallas Morning News, Jan. 15, 1997, <www.dallasnews.com/business/techbiz14.htm>.

[49/] See "Telco Combats Internet Crunch," Telephony, March 17, 1997, at 7.

[50/] See Dallas Morning News, supra.

[51/] Indeed, these solutions clearly reflect the desire of the ILECs to become the sole operator of any newly deployed data networks, just as they have been the monopoly provider of the voice network. Thus, Jim Diestel, Director of Advanced Services for Pacific Bell, states that Pacific intends to control modem pools in the central office, stating that, "Just like the [public network] is shared today and users don't go out and buy voice switches, we'll maintain the modems as part of the network." "Telco Combats Internet Crunch," supra. The potential anticompetitive effects of this orientation are discussed at Section III, infra.

[52/] See Houston Chronicle, supra.

television operators have begun to rollout one-way (telephone company return) cable modems, with the downstream path on the coaxial cable facilities and the upstream path on the existing telephone lines.[53/] Prices for these modems have been dropping significantly in recent months,[54/] and to date, there are dozens of commercial deployments in the United States.[55/] A number of issues still must be addressed, such as the sharing of plant capacity with other modems, equipment standards, noise, signal leakage and other transmission impairment problems.[56/]

Regardless of the promise that the above-referenced technological advances may have in addressing the shortcomings of the circuit-switched voice-driven telephone networks of today, they nevertheless cannot be deemed long-term fixes for the lack of competitive facilities for data traffic. Not only are deployment schedules uncertain, each of the switch enhancements or routing developments cited rely to a greater or lesser extent upon the existing telephone company "last mile." Thus, each require competitors and customers alike to be dependent upon the ILECs' service rollout and provisioning schedules, often conceived

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[53/] See "Cable Modems Move From Concept to Reality," Broadcasting and Cable, Dec. 9, 1996, at 106.

[54/] See "Modems Take Front Seat at Western Show," Multichannel News, Dec. 9, 1996, at 37.

[55/] Indeed, cable modems are being deployed in numerous locations worldwide, including the United Kingdom, Australia, Canada, France and Denmark. See "The Broadband Bob Report," March 3, 1997, at 7-8, <www.catv.org/modem/news/bbb-report/index.html#current>.

[56/] See "Impair That Modem," Cable World, Jan. 27, 1997 at, 35.

in light of overall ILEC business objectives.[57] Further, while each of these options may in theory increase the speed and efficiency of data traffic, it is not clear whether they are viable options for customers residing outside major market centers or who are unable to afford the high costs that are currently associated with the new technologies. As AOL seeks to serve all of its members, including the many who still access the service from low-density geographic areas with technology that is several generations old, only ubiquitous and reasonably-priced alternatives to ILEC facilities will offer a truly viable option to the inefficient circuit-based network.

B. The FCC Should Require and Enforce Fully Open Access And Fair Interconnection to Emerging Enhancements that Improve Data Traffic Flows

In the 1996 Act and the FCC's implementing orders, both the Congress and the FCC recognized that the development of competition depended upon open access to and fair interconnection with ILEC networks.[58] By building upon the open access policies of the

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[57] As AOL noted previously, it is dependent upon the ILECs for its service delivery, both directly and indirectly, to the extent that it seeks to use the services of competitive local exchange carriers ("CLECs"). See Comments of AOL in CC Docket No. 96-262, supra, at 11; Reply Comments of AOL in CC Docket No. 96-262, supra, at 14.

[58] Thus, the legislative history to the 1996 Act states that the purpose of the law was "to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition...." Conference Report, Report 104-458, 104th Cong., 2d sess., Jan. 31, 1996, at 1. See also In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, First Report and Order, CC Docket No. 96-98, FCC 96-

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